



**ENGINEERING OPERATIONS COMMITTEE
MEETING MINUTES
JUNE 7, 2001 - 9:00 A.M.
C&T TRAINING CENTER/ROOM 100**

Present:	C. T. Maki	G. D. Taylor	J. D. Culp
	C. Roberts	P. F. Miller	J. D. O'Doherty
	T. E. Davies	J. W. Reincke	T. Fudaly
	S. Bower		
Guests:	D. L. Smiley	K. Kennedy	C. Bleech
	A. Robords	J. T. LaVoy	M. Frankhouse
	C. Innes	S. Pethers	J. Pitt
	C. Helsel		

OLD BUSINESS

1. Approval of the Minutes of the May 1, 2001, Meeting - C. T. Maki

Minutes of the May 1, 2001, meeting were approved as written.

NEW BUSINESS

1. Improved Aggregate Quality for Pavements - J. D. Culp/D. L. Smiley

Director Rosine has requested that a strategy be developed to implement improved quality requirements for pavement aggregates. He identified three issues that should be addressed by the strategy: network vs project application, the effects on suppliers, and a benefit/cost analysis on implementation to assure customer value.

In 1997 the department began constructing some interstate pavements using a modified concrete mixture (designated P1 Modified) with larger size (4AA) aggregate and lower dilation/absorption requirements. The specifications reduced the number of available aggregate sources, but with no increase in the pavement cost. Based on past and ongoing research, larger coarse aggregate ensures that the pavement will maintain adequate load transfer at joints and at transverse cracks, and it reduces the possibility of shrinkage cracks forming during construction.

ACTION: Dave Smiley and Jim Culp will prepare a draft response for the director.

2. Timely Availability of 4AA Concrete Aggregate in Central Michigan - D. L. Smiley

A major reconstruction project on I-96 in Eaton County is scheduled for 2002. The Special Provision for P1 Modified Concrete, which specifies 4AA aggregate, will be used. The aggregate is not locally produced and will need to be trucked from a dock facility, a southeast Michigan quarry or from an out-of-state quarry. With a limited number of sources that produce 4AA and low demand, it is usually not stockpiled by aggregate producers, but is

produced for individual orders. This could cause on time delivery problems for the paving of I-96.

It is recommended that the 4AA and 6A/AA coarse aggregate for the I-96 project be purchased and stockpiled onsite by the department and provided to the contractor at no cost.

ACTION: The recommendation was tabled for now. The department will get the word out to industry that we intend to continue to use 4AA and, at the same time, we will put out a list of projects where we plan to use P1 Modified Concrete.

3. **Proposal for Pilot Project: Surface Treatment - Special - J. D. Culp**

Andy Sikkema, Ishpeming TSC Manager, Superior Region, submitted a proposal for taking alternate bids on a surface seal contract. He proposes competitive bidding between micro-surfacing, double chip seals and bituminous mixture - ultra thin, all with equivalent three year warranty provisions. The roadbed will be pre-treated with overband crack fill prior to application of any of the surface seal options.

The region believes this proposal will -

- A. Stimulate competition between equally effective surface seal systems.
- B. Increase the number of available bidders for this type of work in the Superior Region.
- C. Assure the lowest cost material is used, while maintaining a high quality seal.

ACTION: Recommendation was tabled pending further investigation into the equivalency of the surface seal options and the expected pavement life extension of each. It was also noted that currently the Bituminous Mixture Ultra-Thin is a Category III CPM method, while the others are in Category II. Traditionally these categories are not mixed.

4. **Pavement Acceptance - S. Bower**

The 1996 standard specifications do not objectively define what initial pavement condition is acceptable before final acceptance can occur on projects. This has led to confusion between department and contractor personnel on specific projects.

The department developed pavement acceptance specifications with both paving industries in 1998 and 1999 to be used on warranty projects. These specifications objectively define what pavement condition must exist before final acceptance can occur on a project. The pavement acceptance specification provides a much clearer understanding to all project personnel as to what pavement condition is acceptable at "final acceptance" on a project.

It is proposed that use of the pavement acceptance specifications be expanded to include all asphalt and concrete paving contracts.

ACTION: EOC approves the recommendation and follow-up discussions with both industries should occur to explain this action.

5. **Pavement Selections - K. Kennedy**

A. M-10 Reconstruction: CS 82111, JN 47085 - **Flexible Bituminous Pavement Selection**

The reconstruction alternates considered were a flexible bituminous pavement (Alternate 1) and a jointed reinforced concrete pavement (Alternate 2).

A life cycle cost analysis was performance and Alternate 1 was approved based on having the lowest Equivalent Uniform Annual Cost. The pavement design and cost analysis summary are as follows:

Alternate 1A (68.75 Percent of the Project) Reconstruct: Flexible Bituminous Pavement (Utilize Existing Subbase)

48mm	Bituminous Mix 5E10, Top Course (Mainline)
63mm	Bituminous Mix 4E10, Leveling Course (Mainline)
98mm	Bituminous Mix 3E10, Base Course (Mainline)
260mm	Aggregate Base (21AA Modified)
360mm	Existing Sand Subbase (360mm Minimum)
150mm	Subbase Underdrains
829mm	Minimum Total Thickness

Alternate 1B (31.25 Percent of the Project) Reconstruct: Flexible Bituminous Pavement (New Subbase)

48mm	Bituminous Mix 5E10, Top Course (Mainline)
63mm	Bituminous Mix 4E10, Leveling Course (Mainline)
98mm	Bituminous Mix 3E10, Base Course (Mainline)
260mm	Aggregate Base (21AA Modified)
360mm	Proposed Sand Subbase
150mm	Subbase Underdrains
829mm	Total Thickness

Present Value Initial Construction Costs	\$324,372/directional kilometer (Composite Cost of 1A and 1B)
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Present Value Initial User Costs	\$363,394/directional kilometer
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Present Value Maintenance Costs	\$90,700/directional kilometer
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Equivalent Uniform Annual Cost	\$49,774/directional kilometer
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B. Capital Loop Reconstruction: CS 33014, JN 45594 - **Flexible Bituminous Pavement Selection**

The reconstruction alternates considered were a flexible bituminous pavement (Alternate 1) and a jointed plain concrete pavement (Alternate 2).

A life cycle cost analysis was performance and Alternate 1 was approved based on having the lowest Equivalent Uniform Annual Cost. The pavement design and cost analysis summary are as follows:

Alternate 1A (Three Lane Section) Reconstruct: Flexible Bituminous Pavement

1.5 in. (38.4mm)	Bituminous Mix 5E1, Top Course (Mainline)
2 in. (50.8mm)	Bituminous Mix 4E1, Leveling Course (Mainline)
3 in. (76.2mm)	Bituminous Mix 3E1, Base Course (Mainline)
6 in. (152.4mm)	Aggregate Base
18 in. (457.2mm)	Sand Subbase
6 in. (152.4mm)	Subbase Underdrains
30.5 in. (774.7mm)	Total Thickness

Alternate 1B (Five Lane Section) Reconstruct: Flexible Bituminous Pavement

1.5 in. (38.4mm)	Bituminous Mix 5E1, Top Course (Mainline)
2 in. (50.8mm)	Bituminous Mix 4E1, Leveling Course (Mainline)
3 in. (76.2mm)	Bituminous Mix 3E1, Base Course (Mainline)
6 in. (152.4mm)	Aggregate Base
18 in. (457.2mm)	Sand Subbase
6 in. (152.4mm)	Subbase Underdrains
30.5 in. (774.7mm)	Total Thickness

Present Value Initial Construction Costs	\$618,924/directional mile
Present Value Initial User Costs	\$1,611/directional mile
Present Value Maintenance Costs	\$140,623/directional mile

Equivalent Uniform Annual Cost	\$48,667/directional kilometer
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6. **Longitudinal Tinning Special Provision - J. T. LaVoy**

Noise mitigation or abatement is not always about building expensive walls or barriers, whose effectiveness is limited to the first 300 to 500 feet behind them. Residential developments have been built adjacent to freeways and in some instances freeways were built next to existing homes. As changes in traffic and surface condition occur, noise levels change.

Tinning a concrete pavement longitudinally is reported to be the best option for reducing tire noise. Longitudinal tinning has been used regularly in two states, Colorado and Iowa. They report good success in reducing tire noise to a minimum.

A special provision has been prepared and is proposed for use on one or two pilot projects in the current construction season. A one mile test section would accommodate a noise study and analysis. An adjacent control section of normal tinning will provide the comparable basis.

ACTION: EOC approves the recommendation. John LaVoy will contact the regions and identify the appropriate pilot projects. The participating region(s) should issue a contract modification for the one mile (minimum) test section, which needs to be all lanes in both directions to allow a valid noise analysis.

7. **Pavement Committee Minutes for April 18, 2001 - S. Bower**

The minutes for the Pavement Committee meeting were reviewed and approved for distribution (attached).

(Signed Copy on File at C&T)
Jon W. Reincke, Secretary
Engineering Operations Committee

JWR:kat

Attachment

cc: EOC Members
Region Engineers

G. J. Rosine	R. J. Risser, Jr. (MCPA)	L. Stornant	T. L. Nelson
R. J. Lippert, Jr.	A. C. Milo (MRBA)	J. Ruszkowski	R. D. Till
D. L. Smiley	J. Becsey (MAPA)	C. Libiran	M. Frierson
M. Nystrom (AUC)	D. Hollingsworth (MCA)	G. J. Bukoski	C. W. Whiteside
M. Newman (MAA)	J. Steele (FHWA)	K. Rothwell	T. E. Myers
J. Murner (MRPA)	K. Peters	T. Phillips	

**Pavement Committee
April 18, 2001 Meeting
Maintenance Division**

Attending:

Steve Bower - Chair
Mike Frankhouse (a)
John LaVoy
Larry Galehouse

Dave Smiley - Secretary
Paul Steinman
Robert Ranck, Jr.
Ryan Rizzo - FHWA (a)

Rich Ostrowski
Gonzalo Puente

(a) = absent

Gary Mayes (Bituminous Unit), Curtis Bleech (Pavement Unit), and Andy Ilieff (Maintenance) also attended.

There was no regular meeting held in March. Committee members approved the February 2001 meeting notes by e-mail, which were accepted by EOC at their May 1st meeting.

OLD BUSINESS

There were no old business agenda items.

NEW BUSINESS

#01-03D SP Ultra-thin Bituminous Mixture

Larry Galehouse and Gary Mayes solicited committee input for support of a new special provision that would improve the material and construction requirements for ultra-thin overlays used in the CPM program. Various forms of the SP have been debated among the Mixtures Task Force members for the past two years. Improvements include binder upgrading, expanded QC/QA requirements, mixture properties based on commercial traffic levels, and the addition of a performance warranty. An ultra-thin treatment is currently used only in Group 3. MAPA wants the treatment to be in Group 2 to directly compete with surface seals.

The committee agreed that the new SP was needed and should be forwarded to EOC for support. Because of past performance problems, a warranty would be required if ultra-thins for low traffic volumes are moved to Group 2.

#01-04D Concrete Pavement Spall Repairs

Larry Galehouse led a committee discussion regrading performance issues on recent projects with concrete spall repairs. The FUSP for these repairs was recently removed from the list because their performance has been sub-standard. Until performance issues are identified and corrected, the use of the treatment will be tightly scrutinized on a project-by-project basis. The Metro Region has established a moratorium on its use until satisfactory performance can be assured. In the interim, Metro will use asphalt patches with a perimeter seal similar to those used on I-94 in St. Clair County. They are also considering a latex modified concrete mixture for patching based upon successful bridge deck repairs. After a lengthy discussion, the committee agreed a technical workshop is needed for education and training, which will be scheduled for this fall/winter. Several success keys will be emphasized at the workshop: They include project selection, site preparation, mix design, curing, inspection, and final acceptance.

#01-05D - A Sealer/Bond Coat for HMA Longitudinal Joints

Gary Mayes requested committee support to specify a bond coat application on the notch-taper for longitudinal joint construction. Several projects have exhibited separation and/or cracking at the exposed tapered joint. The bond-sealer would prevent water intrusion to reinforce the joint's integrity. The committee agreed the added bond material is justified. It will be added to projects that also require sampling-behind the paver to gain experience on cost/benefit.

#01-06P - Aggregate Acceptance for OGDC Bases

Dave Smiley briefed the committee on recent test results from in-place sampling for 4G aggregate in the Metro Region. There have been an excessive amount (25 - 100%) of failing gradation tests on recent reconstruction projects. The aggregate is usually accepted at the production source, then sampled in-place only if the Engineer observes segregation or degradation occurring during base construction. On A+B projects the pavement is usually placed before the results are known, leaving the Engineer with an awkward decision. The matter has been discussed with the Michigan Aggregates Association. They were receptive to narrowing the acceptance bands for specific sieves to compensate for breakdown during handling. The SP also needs a provision to allow some allowance for degradation/segregation with a payment penalty. The issues will be discussed at the next partnering meeting with MCPA before a resolution to the issue is decided.

#01-07D - Incentive Payments

Bob Ranck led a committee discussion about the amount of incentive payments used by the department to encourage higher quality. Several members supported Bob's belief that the payments are too high for the perceived quality being received. This issue is acquiring support on committees assigned to the 2003 specifications book. There is general support for higher quality requirements being specified, in lieu of payment after the fact. Steve will prepare an agenda item for EOC to determine the committee's discretion with the issue.

#01-08D - Alternate Rehabilitation Treatments for M-28 near Seney

Larry Galehouse discussed a section of M-28 near Seney in the Superior Region he recently reviewed, whose condition is beyond any CPM treatment. The Region is seeking input for other possible treatments in lieu of "milling and filling". There was not sufficient information about the pavement's history to offer specific advice, but the pavement appeared to be suitable for a "hot-in-place" reclaiming process using super-heated air without an exposed flame. This process is limited to about a 4" thickness. Gary said he would check lab records on past mixtures used on M-28 and provide the information to Larry.

Notes:

C = work on item is completed

P = item is still pending additional committee action

D = discussion/information item

DLS: C&T 5-16-01 notes accepted